



PROMISING PROGRAM

*One Sky,
Many Voices*

ONE SKY, MANY VOICES

PROGRAM DESCRIPTION

One Sky, Many Voices (OSMV) is a research-focused learning program based on the student's application of knowledge to solve science problems using real-time weather data. Visualization software allows students to track real-life events such as hurricanes, blizzards, floods, and tornadoes. The program, started in 1992, covers 4 or 8 weeks of coordinated study in middle school science, teacher support in the form of local study groups and focused networked discussions by experienced teachers, daily scientists' updates, and a suite of state-of-the art technological tools including current, customizable weather imagery and message board systems. OSMV has been implemented, with varying levels of support, with a large number of students in impoverished urban schools as well as suburban and isolated rural schools. Science- and data-based interactions among students from these diverse populations is a strength of the program.

OSMV promotes important attributes associated with significant learning experiences. Middle school students use an Internet browser for enhancing their investigations of current weather phenomena. Guided by their teachers and linked with experts in the atmospheric and environmental sciences, students view real-time images and converse with their peers on Web-based message boards as an integral part of their studies. Thus, students might experience tracking and predicting current hurricanes, collaboratively studying and discussing current weather fronts in their region, or developing content-rich explanations of weather phenomena in their area to be shared with students who do not live with the same extreme weather patterns.

Studying real-time weather as part of One Sky, Many Voices has afforded students the opportunity to become involved in real-life occurrences. For example, after tracking Hurricane Mitch, many students helped organize relief efforts for victims of the weather phenomenon that they had come to know so intimately as part of their studies.

One Sky, Many Voices engages and empowers students as scientists and provides support for teachers using the associated technology and pedagogy. Students take an active role in the teaching and learning experience. The exchange of roles between students and teachers in this program reflects a sound, progressive school reform effort.

PROGRAM COSTS

For cost information, please contact program designee.

QUALITY AND EDUCATIONAL SIGNIFICANCE

LEARNING

Teachers learn to

- provide students with basic conceptual tools for understanding the use of modeling processes, especially in visual, mathematical, and graphical, representations;
- assess student understanding in more meaningful ways and experiment with more authentic means of assessment;
- improve continuously and update instruction with new software, curriculum materials, and insights from educational research; and
- work collaboratively in action research teams to mutually improve their teaching practice.

Students learn to

- engage collaboratively in making and using models to describe, explain, and predict physical phenomena;
- understand how scientific knowledge is validated by evaluating scientific models through comparison with empirical data; and
- use computers as scientific tools for collecting, organizing, analyzing, visualizing, and modeling real data.

Students increase the abilities necessary to conduct and understand scientific inquiry as well as to make sense of their predictions themselves. They hone their communication skills while conducting online interactive discussions with content mentors and peers distributed nationwide on their focus topics. Peer explanations and predictions are critiqued and discussed in a group forum. After participation in OSMV, students display knowledge of significantly more weather terms, more scientifically valid claims, and more sophisticated measures of scientific thinking.

This integrated program was specifically designed to help learners of all backgrounds, whether students, teachers, researchers, or scientists, to use each other as resources and to collaboratively study interdisciplinary science and its impact on humanity. This is in contrast to the use of curriculum materials in isolation. OSMV is also intended to help learners of all backgrounds better understand the tremendous power of the Internet, when utilized well, to afford profoundly rich and meaningful learning experiences.

USEFULNESS TO OTHERS

Between 1992 and 1999, OSMV grew from 6 teachers and 125 students to over 240 teachers and 11,000 students. Its designers started small in order to research what models of teacher support, student-learning support, and emerging technologies really worked for a wide range of classrooms and audiences. They believe that the key to the program's success is its responsiveness to the needs of teachers and students. Although OSMV is concentrating its efforts on the particular challenge of urban classrooms, the program, with its focused use of the Internet and curriculum combined with full support for teachers, fulfills a need expressed by many teachers everywhere.

FOR FURTHER INFORMATION, CONTACT:

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EXCELLENCE FOR ALL

OSMV achieves its goals by fully supporting teachers in bringing to their community and their colleagues the kind of different learning that Internet-rich programs can offer to schools. OSMV targets schools with low connectivity and that face similar challenges as a way to best meet the needs of all schools. The program currently focuses its local activities on schools in Detroit, many of which have very low socioeconomic status, high crime rates, and challenging teaching environments.

ORGANIZATIONAL CHANGE

Locally, teachers form study groups before, during, and after curricular implementation as a means of scaffolding the learning of new teachers. Because many of the teachers are distributed nationwide, OSMV also organized similar scaffolded study groups online and compensates returning OSMV teachers to act as discussion moderators, to seed discussions, and to respond to the questions and issues of other teachers. After several years of OSMV implementation, a strong cohort of returning teachers serves as an extremely valuable resource for new teachers and sees their professional and in-school roles change. Content support is facilitated through a “message of the day” posted daily by OSMV scientists to assist teachers in guiding student learning to an interesting current weather event of the day. This allows teachers to be content-savvy about scientific phenomena not normally covered in traditional textbooks and makes the content more interesting because of its real-life ramifications.

EVIDENCE OF EFFECTIVENESS

OSMV makes a measurable difference in learning. In 1997, one study found that Detroit seventh-graders in the program (95 percent African-American) not only outperformed eighth-grade African-American students nationwide on content addressed in the curriculum but outperformed all eighth-graders nationwide on these items. These same Detroit students performed significantly lower statistically than all eighth-graders, including African-American eighth-graders, on items not addressed in the program.

The research results also demonstrate that both students and teachers become significantly more computer-literate after work with our programs, and that their attitudes about both science and technology are improved after participation.

OSMV programs have been implemented with urban, rural, suburban, and homeschooled populations. In one important measure of effectiveness, girls’ confidence in science increased significantly to match that of boys at the end of the program. In addition, girls indicated an increase in expectations of achievement at the end of the program.

Teacher comments speak eloquently to the program’s effectiveness: “Very valuable. My students even gave up their recess to read messages.” “I can’t say enough about Hurricanes... The people who put it together really understood what teachers need, and need at their fingertips. The kids were on fire with how much they were learning and they hated to quit.”